AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF CLAIMS:

1.(original) Method for deciding the direction to a flickering source in relation to a measurement point in an electrical network with alternating current with a network frequency (f_c) with low-frequency amplitude variations from the flickering source, characterized in that the method comprises the steps:

- recording of an amplitude-modulated current signal ($i(n)$) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the current signal ($i(n)$);

- recording of an amplitude-modulated voltage signal ($u(n)$) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the voltage signal ($u(n)$);

- signal processing of the current signal ($i(n)$) in such a way that only the low-frequency amplitude variations remain in the form of a flicker component for the current signal ($i(n)$);

- signal processing of the voltage signal ($u(n)$) in such a way that only the low-frequency amplitude variations remain in the form of a flicker component for the voltage signal ($u(n)$);

- creation of a product by multiplication of the flicker component for current and the flicker component for voltage;

- processing of the product in such a way that a flicker power (Π) is obtained with a sign value that indicates in which direction the flickering source is located in relation to the measurement point.

2.(original) Method according to Claim 1, characterized in that the sign value of the flicker power is negative when the flickering source is located below (19) the measurement point (17) and in that the sign value is positive when the flickering source is located above (18) the measurement point (17).

3.(currently amended) Method according to Claim 1 [[or 2]], characterized in that:

- the signal processing of the current signal (i(n)) comprises the steps:

    - creation of a first demodulated signal by demodulation of the current signal (i(n));

    - filtering off of the signals that originate from the network frequency (f_c) in the first demodulated signal in such a way that only the low-frequency variations remain in the form of the flicker component for current;

- the signal processing of the voltage signal (u(n)) comprises the steps:

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- creation of a second demodulated signal by demodulation of the voltage signal;

- filtering off of the signals that originate from the network frequency in the second demodulated signal in such a way that only the low-frequency variations remain in the form of the flicker component for voltage.

4. (original) Method according to Claim 3, characterized in that the method comprises the steps:

- filtering off of the signals that originate from the network frequency (f_c) in the first demodulated signal in such a way that only the low-frequency variations relating to the flicker component for current remain in the form of a flicker signal ($I_{LF(n)}$) for current;

- filtering off of the signals that originate from the network frequency in the second demodulated signal in such a way that the low-frequency variations relating to the flicker component for voltage remain in the form of a flicker signal ($U_{LF(n)}$) for voltage;

- of the product creating an instantaneous power signal ($\Pi(n)$) by multiplication of the flicker signal ($I_{LF(n)}$) for current and the flicker signal ($U_{LF(n)}$) for voltage;

- of the product being processed by the creation of the average value of the instantaneous power signal ($\Pi(n)$) whereby the flicker power (Π) is created with the sign value.

5. (currently amended) Method according to <u>claim 3</u> ~~any one of Claims 3-4~~, characterized in that:

- the first demodulated signal is created by square demodulation of the current signal;

- the second demodulated signal is created by square demodulation of the voltage signal.

6. (currently amended) Method according to <u>claim 3</u> ~~any one of Claims 3 or 4~~, characterized in that the filtering is carried out with a bandpass filter with a lower limit of 0.1 Hz and an upper limit of 35 Hz, but with a preferred upper limit of 25 Hz.

7. (original)   Method for diagnostics at a measurement point in an electrical network with alternating current with a network frequency (f_c) with low-frequency amplitude variations from a flickering source, characterized in that the method comprises the steps:

- recording of an amplitude-modulated current signal ($i(n)$) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the current signal ($i(n)$);

- recording of an amplitude-modulated voltage signal ($u(n)$) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the voltage signal ($u(n)$);

- frequency analysis of the wave form of the voltage signal (u(n)) by means of an N-point DFT analysis (Discrete Fourier Transform), which gives rise to a voltage vector (U) which contains the frequency spectrum for the voltage signal (u(n)) in the form of N complex voltages;

- frequency analysis of the wave form of the current signal (i(n)) by means of an N-point DFT analysis (Discrete Fourier Transform), which gives rise to a current vector (I) which contains the frequency spectrum for the current signal (i(n)) in the form of N complex currents;

- the creation of a power vector (P) by means of the multiplication, element by element, of the voltage vector (U) and the current vector (I);

- multiplication of the power vector (P) by a weighting vector (W) that eliminates the power component that originates from the network frequency, with the power vector (P) comprising partial powers (P_k) concerning power components from the flickering source,

- creation of a flicker power (Π) with a sign value by means of summation of the partial powers (P_k), and

- analysis of the sign value, with the sign value indicating in which direction from the measurement point the flickering source is to be found.

8.(original)   Method according to Claim 6, characterized in
that the flicker power (Π) is created by means of the
following steps:

- summation of the partial powers (P_k) by means of the formula:

$$\Pi = \sum_{k=1}^{N} \mathrm{Re}\left\{\frac{1}{2}W_k \cdot U_k \cdot I_k^{*}\right\}$$

9.(original)   Method according to Claim 6, characterized in
that the flicker power (Π) is created by means of the
following steps

- square demodulation (x^2) of the voltage signal (u(n));

- square demodulation (x^2) of the current signal (i(n));

- calculation of the frequency spectrum of the square-
demodulated voltage signal by means of an N-point DFT analysis
(Discrete Fourier Transform) which gives rise to the voltage
vector (U);

- calculation of the frequency spectrum of the square-
demodulated current signal by means of an N-point DFT analysis
(Discrete Fourier Transform) which gives rise to the current
vector (I);

- creation of the flicker power (Π) by means of summation of
the partial powers (P_k) which contribute to the flicker
phenomenon by means of the formula:

$$\Pi = \sum_{k=1}^{N} \text{Re} \left\{ \frac{1}{2} w1_k \cdot U_k \cdot w2_k \cdot I_k^* \right\}$$

where the elements $w1_k$ and $w2_k$ replace W and eliminate the power component that originates from the network frequency and weight the correct amplitudes of the frequency components U_k and I_k, in accordance with:

$$w1_k = \begin{cases} \dfrac{1}{U_c} & \textit{for } 1 \le k \le i \\ 0 & \textit{for } k > i \end{cases}$$

$$w2_k = \begin{cases} \dfrac{1}{I_c} & \textit{for } 1 \le k \le i \\ 0 & \textit{for } k > i \end{cases}$$

where it is assumed that the low-frequency flickers are to be found in a frequency band up to and including tone i (0 < $f_{flicker} \le$ i).

10.(original) Arrangement comprising means for deciding the direction to a flickering source in relation to a measurement point in an electricity network with alternating current with a network frequency (f_c) with low-frequency amplitude variations from the flickering source, characterized in that the arrangement comprises:

- means for recording an amplitude-modulated current signal (i(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the current signal (i(n));

- means for recording an amplitude-modulated voltage signal
($u(n)$) comprising signals that originate from the network
frequency (f_c) and the low-frequency amplitude variations in
the voltage signal ($u(n)$);

- means for signal processing the current signal ($i(n)$) in
such a way that only the low-frequency amplitude variations
remain in the form of a flicker component for the current
signal ($i(n)$);

- means for signal processing the voltage signal ($u(n)$) in
such a way that only the low-frequency amplitude variations
remain in the form of a flicker component for the voltage
signal ($u(n)$);

- means for creating a product by multiplication of the
flicker component for current and the flicker component for
voltage;

- means for processing the product in such a way that a
flicker power (Π) is obtained with a sign value that indicates
in which direction the flickering source is located in
relation to the measurement point.

11.(original) Arrangement according to Claim 10,
characterized in that:

- the means for signal processing of the current signal ($i(n)$)
comprises:

        - means for creating a first demodulated signal by means
        of demodulation of the current signal ($i(n)$);

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- means for filtering off the signals that originate from

the network frequency (f_c) in the first demodulated signal

in such a way that only the low-frequency variations

remain in the form of the flicker component for current;

- the means for signal processing of the current signal

($i(n)$), comprises:

- means for creating a second demodulated signal by means

of demodulation of the voltage signal;

- means for filtering off the signals that originate from

the network frequency in the second demodulated signal in

such a way that only the low-frequency variations remain

in the form of the flicker component for voltage.

12.(original)   Arrangement for diagnostics at a measurement

point in an electrical network with alternating current with a

network frequency (f_c) with low-frequency amplitude variations

from a flickering source, characterized in that the

arrangement comprises:

- means for recording an amplitude-modulated current signal

($i(n)$) comprising signals that originate from the network

frequency (f_c) and the low-frequency amplitude variations in

the current signal ($i(n)$);

- means for recording an amplitude-modulated voltage signal

($u(n)$) comprising signals that originate from the network

frequency (f_c) and the low-frequency amplitude variations in

the voltage signal ($u(n)$);

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- means for frequency analysis of the wave form of the voltage signal (u(n)) by means of an N-point DFT analysis (Discrete Fourier Transform), which gives rise to a voltage vector (U) which contains the frequency spectrum for the voltage signal (u(n)) in the form of N complex voltages;

- means for frequency analysis of the wave form of the current signal (i(n)) by means of an N-point DFT analysis (Discrete Fourier Transform), which gives rise to a current vector I which contains the frequency spectrum for the current signal (i(n)) in the form of N complex currents;

- means for the creation of a power vector (P) by the multiplication, element by element, of the voltage vector (U) and the current vector (I);

- means for the multiplication of the power vector (P) by a weighting vector (W) that eliminates the power component that originates from the network frequency, with the power vector (P) comprising partial powers (P_k) concerning power components from the flickering source,

- means for the creation of a flicker power (Π) with a sign value, by summation of the partial powers (P_k), and

- means for analysis of the sign value, with the sign value indicating in which direction from the measurement point the flickering source is to be found.

13.(new) Method according to Claim 2, characterized in that:

- the signal processing of the current signal (i(n)) comprises the steps:

     - creation of a first demodulated signal by demodulation of the current signal (i(n));

     - filtering off of the signals that originate from the network frequency (f_c) in the first demodulated signal in such a way that only the low-frequency variations remain in the form of the flicker component for current;

- the signal processing of the voltage signal (u(n)) comprises the steps:

     - creation of a second demodulated signal by demodulation of the voltage signal;

     - filtering off of the signals that originate from the network frequency in the second demodulated signal in such a way that only the low-frequency variations remain in the form of the flicker component for voltage.

14. (new) Method according to claim 4, characterized in that:

- the first demodulated signal is created by square demodulation of the current signal;

- the second demodulated signal is created by square demodulation of the voltage signal.

15. (new) Method according to claim 4, characterized in that the filtering is carried out with a bandpass filter with a lower limit of 0.1 Hz and an upper limit of 35 Hz, but with a preferred upper limit of 25 Hz.

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